AMENDMENTS TO THE CLAIMS

Please amend claims 49-54, 58, 59, and 61 to read as shown below; and cancel claims 37-48, 57, 60, 62-102 as shown below.

What is claimed is:

1. (Original) A method for increasing the channel data rate throughput in an optical fiber communication system while minimizing a bit error rate, the method comprising the steps of:

receiving a digital input signal, comprising a series of input pulses, each input pulse having one of two pulse levels ;

creating a digital input word having *n* bits from the digital input signal;

converting each digital input word to a corresponding output symbol representing one of 2^n distinct values;

generating an output signal comprising a series of output symbols; and

modifying a first output symbol, according to a signal property of a preceding output symbol and a signal property of a succeeding output symbol.

2. (Original) The method of Claim 1, wherein the step of modifying the first output symbol comprises accessing a look-up table to determine an appropriate modification of a signal property of the first output symbol.

3. (Original) The method of Claim 1, wherein the step of modifying the first output symbol is performed by a precompensation circuit.

4. (Original) The method of Claim 1, wherein the digital input signal is received from *n* separate channels, the output signal having *n* times higher data rate than that of one of the *n* separate channels.

5. (Original) The method of Claim 1, wherein the digital input signal is received from a single channel.

6. (Original) The method of Claim 1, wherein the spectral occupancy of the optical signal is minimized.

7. (Original) The method of Claim 1, wherein the signal property of the preceding output symbol is a first amplitude and the signal property of the succeeding output symbol is a second amplitude and further comprising the step of interrogating the output signal to determine an amplitude of the first output symbol.

8. (Original) The method of Claim 7, further comprising the step of interrogating the output signal to determine the amplitude of the preceding output symbol.

9. (Original) The method of Claim 7, further comprising the step of interrogating the output signal to determine the amplitude of the succeeding output symbol.

10. (Original) The method of Claim 7, wherein the first output symbol, is delayed to determine the amplitude of the succeeding output symbol.

11. (Original) The method of Claim 10, wherein a transmission line is used to delay the first output symbol for a first delay time.

12. (Original) The method of Claim 10, wherein a digital register is used to store the first output symbol, thereby delaying the first output symbol for a first delay time.

13. (Original) The method of Claim 7, wherein the preceding output symbol, is delayed to determine the amplitude of the first output symbol.

14. (Original) The method of Claim 13, wherein a transmission line is used to delay the preceding output symbol for a second delay time.

15. (Original) The method of Claim 13, wherein a digital register is used to store the first output symbol, thereby delaying the first output symbol for a first delay time.

16. (Original) The method of Claim 1, wherein the step of modifying the first output symbol comprises modifying an amplitude of the first output symbol.

17. (Original) The method of Claim 16, wherein the step of modifying the amplitude of the first output symbol comprises modifying the amplitude of the first output symbol based on the amplitude of the first output symbol.

18. (Original) The method of Claim 16, wherein the step of modifying the amplitude of the first output symbol comprises modifying the amplitude of the first output symbol based on the amplitude of the preceding output symbol.

19. (Original) The method of Claim 16, wherein the step of modifying the amplitude of the first output symbol comprises modifying the amplitude of the first output symbol based on the amplitude of the succeeding output symbol.

20. (Original) The method of Claim 16, wherein the step of modifying the amplitude of the first output symbol comprises modifying the amplitude of the first output symbol based on the phase of the first output symbol

21. (Original) The method of Claim 16, wherein the step of modifying the amplitude of the first output symbol comprises modifying the amplitude of the first output symbol based on the phase of the preceding output symbol.

22. (Original) The method of Claim 16, wherein the step of modifying the amplitude of the first output symbol comprises modifying the amplitude of the first output symbol based on the amplitude of the succeeding output symbol.

23. (Original) The method of Claim 1, further comprising the step of further modifying the first output symbol, according to an amplitude of a second preceding output symbol and a second succeeding output symbol.

24. (Original) The method of Claim 1, wherein the signal property of the preceding output symbol is a first frequency, the signal property of the succeeding output symbol is a third frequency and the signal property of the succeeding output symbol is a second frequency and further comprising the step of interrogating the output signal to determine a frequency of the first output symbol.

25. (Original) The method of Claim 24, wherein the step of modifying the first output symbol comprises modifying the frequency of the first output symbol.

26. (Original) The method of Claim 25, wherein the step of modifying the frequency of the first output symbol comprises modifying the frequency of the first output symbol based on the frequency of the preceding output symbol. The method of Claim 22, wherein the step of modifying the frequency of the first output symbol comprises modifying the frequency of the first output symbol based on the frequency of the succeeding output symbol.

27. (Original) The method of Claim 22, wherein the step of modifying the frequency of the first output symbol comprises modifying the frequency of the first output symbol based on the frequency of the first output symbol.

28. (Original) The method of Claim 1, wherein the signal property of the preceding output symbol is a first phase and the signal property of the succeeding output symbol is a second phase and further comprising the step of interrogating the output signal to determine a phase of the first output symbol.

29. (Original) The method of Claim 28, wherein the step of modifying the first output symbol comprises modifying a phase of the first output symbol.

30. (Original) The method of Claim 29, wherein the step of modifying the phase of the first output symbol comprises modifying the phase of the first output symbol based on the phase of the first output symbol.

31. (Original) The method of Claim 29, wherein the step of modifying the phase of the first output symbol comprises modifying the phase of the first output symbol based on the phase of the succeeding output symbol.

32. (Original) The method of Claim 29, wherein the step of modifying the phase of the first output symbol comprises modifying the phase of the first output symbol based on the phase of the preceding output symbol.

33. (Original) The method of Claim 29, further comprising the step of further modifying the first output symbol, according to a phase of a second preceding output symbol and a phase of second succeeding output symbol.

34. (Original) The method of Claim 29, wherein the step of modifying the phase of the first output symbol depends upon the amplitude of the preceding output symbol.

35. (Original) The method of Claim 29, wherein the step of modifying the phase of the first output symbol depends upon the amplitude of the succeeding output symbol.

36. (Original) The method of Claim 29, wherein the step of modifying the phase of the first output symbol depends upon the amplitude of the first output symbol.

37-48. (Canceled)

49. (Currently Amended) The method of Claim 58 ~~Claim 48~~, wherein the digital input signal is received from *n* separate channels, the output signal having *n* times higher data rate than that of one of the *n* separate channels.

50. (Currently Amended) The method of Claim 58 ~~Claim 48,~~ wherein the digital input signal is received from a single channel.

51. (Currently Amended) The method of Claim 58 ~~Claim 48~~, wherein error correction coding is applied to the input data.

52. (Currently Amended) The method of Claim 58 ~~Claim 48~~, wherein a drive current controls the optical source.

53. (Currently Amended) The method of Claim 58 ~~Claim 48~~, wherein the step of adding a signal dependent bias comprises changing the drive current associated with the output signal by an error current.

54. (Currently Amended) The method of Claim 61 ~~Claim 52~~, wherein the drive current controls a laser diode.

55. (Original) The method of Claim 54, wherein a nonlinear element is used to shunt an error current from the drive current.

56. (Original) The method of Claim 55, wherein the laser diode is a nonlinear optical modulator device.

57. (Canceled)

58. (Currently Amended) ~~The method of Claim 57, wherein~~ A method for increasing the channel data rate throughput in an optical fiber communication system, the method comprising the steps of:

receiving a digital input signal, comprising a series of input pulses, each input pulse having one of two pulse levels;

creating a digital input word having *n* bits from the digital input signal;

converting each digital input word to a corresponding output symbol having one of 2^n distinct values;

generating an output signal comprising a series of output symbols;

adding a signal dependent bias to the output signal so that a linear response is generated in the optical source; and

using the optical source to transmit the output signal;

wherein a drive voltage controls the optical source and a series resistor is used to convert a nonlinear shunt current into a nonlinear voltage drop to reduce the drive voltage.

59. (Currently Amended) The method of Claim 58 ~~Claim 57~~, wherein the step of adding a signal dependent bias comprises adjusting the drive voltage associated with the output signal by an error voltage.

60. (Canceled)

61. (Currently Amended) ~~The method of Claim 60, wherein~~ A method for increasing the channel data rate throughput in an optical fiber communication system, the method comprising the steps of:

receiving a digital input signal, comprising a series of input pulses, each input pulse having one of two pulse levels;

creating a digital input word having *n* bits from the digital input signal;

converting each digital input word to a corresponding output symbol having one of 2^n distinct values;

generating an output signal comprising a series of output symbols;

adding a signal dependent bias to the output signal so that a linear response is generated in the optical source; and

using the optical source to transmit the output signal;

wherein a drive current controls the optical source; the drive current controls a Mach-Zehnder modulator; and a series resistor is used to convert a nonlinear shunt current into a nonlinear voltage drop to reduce the drive voltage.

62-102. (Canceled)

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